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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/765,916	01/18/2001	Frederic Canut	260/087	8270

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EXAMINER
KANG, INSUN

ART UNIT	PAPER NUMBER
2124	8

DATE MAILED: 12/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	**Applicant(s)**
Office Action Summary	09/765,916	CANUT ET AL.
	Examiner	**Art Unit**	
	Insun Kang	2124	

-- The MAILING DATE of this communication appears on the cover sheet with the correspond nc address --

Period f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.
2a) ☐ This action is **FINAL.**　　2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-26</u> is/are pending in the application.
　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) <u>1-26</u> is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on <u>18 January 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.
　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
　　a)☐ All　b)☐ Some * c)☐ None of:
　　　1.☐ Certified copies of the priority documents have been received.
　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.
　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
　　* See the attached detailed Office action for a list of the certified copies not received.
13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
　　a) ☐ The translation of the foreign language provisional application has been received.
14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5 and 7</u>.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____ .

DETAILED ACTION

1. The priority date for the application is 07/03/2000.

2. This action is responding to application papers dated 1/18/01, 6/3/02 and 3/4/03.

3. Claims 1-26 are pending and examined.

4. The IDS dated 6/3/02 is not considered due to missing copies. The missing copies

are included in IDS dated 3/4/2003.

Specification

5.   Applicant is reminded of the proper language and format for an abstract of the
disclosure.

        The abstract should be in narrative form and generally limited to a single
paragraph on a separate sheet within the range of 50 to 150 words. It is important that
the abstract not exceed 150 words in length since the space provided for the abstract
on the computer tape used by the printer is limited. The form and legal phraseology
often used in patent claims, such as "means" and "said," should be avoided. The
abstract should describe the disclosure sufficiently to assist readers in deciding whether
there is a need for consulting the full patent text for details.

        The language should be clear and concise and should not repeat information
given in the title. It should avoid using phrases which can be implied, such as, "The
disclosure concerns," "The disclosure defined by this invention," "The disclosure
describes," etc.

6.   The abstract of the disclosure is objected to because the abstract exceeds 150

words in length. Correction is required. See MPEP § 608.01(b).

Claim Objections

7.   Claims 1-3 are objected to because of the following informalities: The line

numbers shown in these claims cause confusion with claim numbers. Appropriate

correction is required.

8.   In claims 13 and 26, "either the act of feature tuning" needs to be changed either

to include the missing "or" part or to remove "either" from the sentence. Correction is

required. The claim is interpreted as "... comprises the act of feature tuning."

Claim Rejections - 35 USC § 112

9.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

10.   The term "substantially" in claims 1 and 14 is a relative term, which renders the

claim indefinite. The term "substantially" is not defined by the claim, the specification

does not provide a standard for ascertaining the requisite degree, and one of ordinary

skill in the art would not be reasonably apprised of the scope of the invention.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

11.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12.   Claims 1-3 and 8-26 are rejected under 35 U.S.C. 102(e) as being anticipated by

Pieper et al (US 2003/0005419).

Regarding claim 1, Pieper et al. disclose a method of optimizing a software

program for a target processor to meet performance objectives, where the software

program is coded in a high-level Language (col 0019; col 0020), the method comprising

the steps of: (a) optimizing the software program such that a resulting first optimized

form of the software program is substantially independent of the target processor and is

substantially coded in the high-level language (col 0020; 0030); (b) optimizing the first

optimized form of the software program such that a resulting second optimized form of

the software program is substantially dependent on the target processor and is

substantially coded in the high-level language (col 0031, 0020); and (c) optimizing the

second optimized form of the software program such that a resulting third optimized

form of the software program is substantially dependent on the target processor and is

includes portions coded in a low-level language of the target processor (col 0031).

Regarding claim 2, Pieper et al. disclose the method of claim 1, further

comprising steps of: (al) determining a first performance profile for the first optimized

form of the software program, and comparing the first performance profile with the

performance objectives (col 0031; col 0045); and (bl) determining a second

performance profile for the second optimized form of the software program, and

comparing the second performance profile with the performance objectives (col 0032;

0044).

Regarding claim 3, Pieper et al. disclose the method of claim 2, wherein steps

(b), (bl), and (c) are not performed if the performance objectives are met after

completing step (a), and step (c) is not performed if the performance objectives are met

after completing step (b) (" the executable code is executed by process to generate

execution profile data that is used by the processes to determine whether the code,

when executed, exhibits optimal execution performance, and if code does not exhibit

optimal execution performance, may be used by the processes make more is optimal

versions of the code from which more optimal versions of code may be generated," col

0032).

Regarding claim 9, Pieper et al. disclose the act of implementing reference code

comprises code profiling (col 0031, 0042 ; 0046 ; 0048 ; 0049 ; 0052).

Regarding claim 8, this claim is another version of the claimed method discussed

in claim 9, wherein all claim limitations also have been addressed and/or covered in

cited areas as set forth the above. Therefore, accordingly, Pieper et al. anticipate this

claim.

Regarding claim 10, Pieper et al. disclose the method of claim 1 in which step (b)

comprises the act of optimization predicted to improve resulting assembly code ("In

generating the code, generator modifies the code such that code reflects scheduling

and other low-level optimizations of the code, which are dependent on the target

processor architecture," 0031; 0032; 0009).

Regarding claim 11, Pieper et al. disclose the method of claim 1 in which step (b)

comprises the act of tuning low-level functions (0031).

Regarding claim 12, Pieper et al. disclose the method of claim 1 in which step (c) comprises the act of manual assembly optimization. Typically hand-coded assembly for optimized performance is necessary for performance critical routines such as graphics or math library routines as they often must access low-level machine instructions for optimal execution performance. Therefore, accordingly, Pieper et al. anticipate this claim. See also 0009 and 0018.

Regarding claim 13, Pieper et al. disclose the methods claim I in which step (b) comprises the act of feature tuning (0031; 0032).

Regarding claim 14, see the rejection of claim 1 above.

Regarding claim 15, see the rejection of claim 2 above.

Regarding claim 16, see the rejection of claim 3 above

Regarding claim 17, see the rejection of claim 4 above

Regarding claim 18, see the rejection of claim 5 above

Regarding claim 19, see the rejection of claim 6 above

Regarding claim 20, see the rejection of claim 7 above

Regarding claim 21, see the rejection of claim 8 above

Regarding claim 22, see the rejection of claim 9 above.

Regarding claim 23, see the rejection of claim 10 above

Regarding claim 24, see the rejection of claim 11 above

Regarding claim 25, see the rejection of claim 12 above

Regarding claim 26, see the rejection of claim 13 above

Claim Rejections - 35 USC § 103

13.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14.   Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Pieper et al (US 2003/0005419) in view of Kum et al (0-7803-5041-3/99, IEEE).

Regarding claim 4, Pieper et al. do not specifically mention a floating-point

implementation. However, Kum et al. disclose deriving a floating point implementation

(pg 2163, introduction, col 3, "...the ranges of floating point variables are estimated by

the simulation of the range estimation program that is automatically generated from the

original floating-point version," see also Figure 1) for the purpose of automatic scaling of

all numbers so that the numbers use the full word length available and for the purpose

of reducing the risk of overflow.

Therefore, it would have been obvious to a person of ordinary skill in the art to

incorporate the teaching of Kum et al. to the method of Pieper et al. The modification

would be obvious to include the floating-point implementation because of the automatic

scaling of each number to use the full word length of the mantissa so that accurate

representation of numbers can be obtained while minimizing the risk of overflow and

quantization errors.

Regarding claim 5, Pieper et al. do not specifically mention a fixed point implementation. However, Kum et at. disclose the method of claim 1 in which step (a) comprises the act of deriving a fixed point implementation so that "assembly coding and manual scaling can be avoided and the translated C programs are executed very efficiently" in fixed-point DSPs (pg 2163, Introduction, lines 1-15).

Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Kum et al. to the method of Pieper et al. The modification would be obvious to include the fixed-point implementation so that round-off errors can be prevented and target dependent scaling shift can be minimized while obtaining fast real-time processing with less power and memory usage.

Regarding claim 6, Pieper et al. do not specifically mention the act of processing qualification. However, Kum et al. further disclose the act of processing qualification (Introduction, col3; simulation-based integer word-length determination, pg 2165, shift reduction, col 10; pg 2163, col 6; pg 2166, Concluding remarks) so that cost effective and high quality fast real-time processing with less power and memory usage can be obtained while reducing quantization noise.

Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Kum et al. to the method of Pieper et al. The modification would be obvious to include the act of processing qualification for the purpose of high quality processing with minimized quantization noise.

Regarding claim 7, Pieper et al. do not specifically mention the act of implementation sizing. However, Kum et al. further disclose the act of implementation

sizing (abstract; Introduction, pg 2163, col3; pg 2163, simulation-based integer word-length determination) by program-profiling results (pg 2164-2165, Sift reduction) so that estimation of code size for the target can be obtained and the risk of overflow can be prevented.

Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Kum et al. to the method of Pieper et al. The modification would be obvious to include the act of implementation sizing for the purpose of code size estimation so that the risk of overflow can be prevented.

15.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Insun Kang whose telephone number is 703-305-6465. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on 703-305-9662. The fax phone number for the organization where this application or proceeding is assigned is 703-308-3988.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

IK
12/04/03

JOHN CHAVIS
PATENT EXAMINER
ART UNIT 2124